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DATA PROCESSING DIGEST

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General Information

FACILITIES FOR A LARGE COMPUTER INSTALLATION

Robert B. Curry, Southern Railway Co., Washington, D.C.
ADVANCED MANAGEMENT, January 1958; pages 5-11.

So few articles have been written for the benefit of those about to enter the site preparation phase of a computer installation, that this article will be considered a milestone. It is a detailed case history of Southern's installation plans, and an excellent check list of items which must be covered in planning the physical facilities.

Installation costs are estimated at from $100,000 to $200,000, for a large scale computer system, depending upon the amount of remodeling or new building that must be done. Southern's installation costs were approximately $145,000. The 18- to 30-month waiting period between selection and delivery of the equipment may be used for planning and constructing the site. Space requirements for a large computer are at least 4000 square feet. This includes the working area around the equipment. However, planning should be flexible, to allow for future changes in equipment, or additional new equipment. Equipment needs should be outlined by the time the computer order has been signed, and should include all office furniture and storage, as well as the computer's auxiliary equipment.

Scale models of the equipment and furniture should be made and placed in numerous arrangements on a scale drawing of the area until the best one is determined. One-tenth scale models of both IBM and Remington Rand computers may be purchased from Lester Associates, Inc., priced at from $1500 to $5000. Arrangement of the components is limited by the length of cables, work clearances, and walkways.

A time table is suggested for those portions of the installation plans to be completed 12 months, six months, four months, one month, two weeks and one week before delivery of the equipment. Ten suggestions are given for general layout, including ideal placement of the console in relation to the tape units and the main frame, adequate work areas, and location of the memory drum. Require-

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ments for floor construction are given, with a detailed description of Southern's steel deck panel floor. Air conditioning is considered as a crucial factor, and includes rigid temperature, humidity, and dust control. Moisture control, correct lighting, good acoustics, and fire protection must be provided. Magnetic tape storage must provide for humidity and temperature control; and protection from dust and magnetic materials must be included. Housekeeping practices are also important, and are outlined here in detail.

The article includes diagrams and photos of details of Southern's installation, and a breakdown of cost estimates of their site preparation.

MACHINE ACCOUNTING AND COMPUTER DEVELOPMENT IN RUSSIA

THE ACCOUNTANT, January 11, 1958; pages 28-30.

Reports in Russian trade journals, especially in the Vestnik Maschinostroyeniya (Herald of Machine-Building), reveal that machine accounting centers are being established to make more efficient use of business machines which often are being used at only 50 to 60% of capacity. Experts in the business management field are complaining that "'the bookkeeper complex still prevails in the use of calculating machines'..." and that better education is necessary to transform the prospective managers of the calculating centers into "engineer-economists." The use of electronic computers for business has been given a low priority in the current computer production program, and their use for accounting purposes is not planned until 1960. Meanwhile 32 factories are to be built for production of electronic equipment for engineering purposes. With the demand running ahead of supply, one Russian expert has advised students and professors to cooperate in producing computers for their own use on a do-it-yourself basis.

WHAT TOP MANAGEMENT NEEDS TO KNOW ABOUT ELECTRONIC DATA PROCESSING

Richard F. Neuschel, McKinsey & Company, Inc., New York
General Management Series Booklet No. 187
American Management Association, 1957

"...there are just three possible justifications for using EDP in the management field (that is, exclusive of its possible application in the design or engineering fields). These are: 1. To cut clerical costs. 2. To produce faster and better management control information than is practicable by alternative methods. 3. To facilitate the application of mathematical analysis techniques to the solution of business problems. This is the field that has become widely referred to as operations research."

"In the area of clerical cost control, the fundamental need in most companies is not a mere willingness to automate the office. First, management must make sure that it is using all the techniques necessary to bring its control of office costs up to the level of its control over factory costs. In terms of the pay-out produced, the most important of these techniques are: (1) a tough-minded redetermination of what work is really essential or 'earns a profit,' and (2) the application of systematic work measurement techniques to determine how many people are needed to do this work."

OR is EDP profit-making area

The production of more management information is suspect. "The real need in this area is not to superimpose a great many more reports on the existing information structure. Rather, the need is to think through critically what information is really needed or can be profitably used for planning and controlling the business." The operations research area "seems clearly destined to be the one in which EDP will have its greatest profit-making impact." In this area, "the primary need is not for equipment, but for talent--to identify profitable opportunities where mathematical analysis techniques can be applied to business problems and to generate greater analytical skill and imagination among the whole management team."

The author points out some of the errors in estimating non-recurring costs which are characteristic of many feasibility studies. These include: cost of flow charting, training personnel, programing for the computer applications, preparation of physical facilities, indoctrinating personnel who will be affected by the installation, data conversion, program checking, parallel operation, effects of the learning curve. In addition, certain recurring costs are also underestimated. These include machine time; machine utilization (often overestimated); and the real-life exceptions, mistakes, and inefficiencies which do not show up on an idealized proposed system.

AUTOMATION IN THE OFFICE

National Office Management Association, Survey Summary #21.

A survey was made by the National Office Management Association (NOMA) of nearly 4000 companies of all sizes, to determine the current use and future needs of automation in offices. Less than 3% of these companies now have EDP, 5% have some kind of IDP, and 33% have punch card installations. Of those having EDP systems, 68% have "medium size" units, and 24% have "large" units. The apparent tendency is for larger companies to place orders for EDP equipment before instituting feasibility studies. The reverse is true for the smaller firms. The entire report has been published and may be purchased from NOMA. Price: $5.00.

AUTOMATIC HANDLING OF CHECKS

BANKING, February 1958; pages 42, 43.

Specific recommendations for placement of magnetic coding on checks have been announced by the A. B. A. The minimum check length shall be 6 inches. The right hand edge will be the reference point. On all checks except 80-column punch card checks, both pre-printed and post-printed characters shall be confined within a horizontal band 1/4 inch wide extending across the check 1/4 inch above the lower edge. On 80-column punch card checks, pre-printing will be below the 9's position, but post-printing will be in the same position as on other checks. Forty-eight character spaces each 1/8 inch wide will be allocated as follows: From right to left--3 tolerance, 12 amount (including "start-stop" symbols), 19 drawee banks data (for account number, transaction, printing tolerance, start-stop, etc.), 11 transit number-routing symbol, 3 tolerance.

AUTOMATION SYMPOSIUM

Published by National Association of Bank Auditors and Comptrollers.

The Proceedings of the NABAC-sponsored Automation Symposium held in May 1957 include fourteen papers which show the status and the thinking of the bank industry in the matter of electronic data processing. As might be expected of this industry, it is advancing cautiously. The industry organizations are among the most aggressive in researching their needs for automation. As mentioned in the last paper of the proceedings, the NABAC has engaged the Armour Research Foundation to make a survey of what banks throughout the United States are doing in electronics. On the basis of this study, the NABAC will consider the setting up of an information and research service for the industry.

Small bank EDP and check-processing problems

Meanwhile, if conclusions may be drawn from the content of the proceedings two trends appear: The use of small equipment by the smaller banks, and the increasing demand for standards in handling checking accounts. Small banks are finding some answers to their problems in the smaller computers and electronic bookkeeping machines such as the E101, the Postronic, and the Sensitronic. The IBM 650 is used in two applications described here--one for mortgage loan accounting, the other for processing checking accounts. Many banks, as well as the A. B. A. are preoccupied with the problem of account numbering and check qualifications. The proceedings include a status report on magnetic ink imprinting and the A. B. A. specifications for pre-qualified checks. Other papers describe the Howard Savings Bank feasibility study, the Bank of America's Erma, and the use of the IBM RAMAC in processing installment loans. Price of the proceedings is $5.00 for NABAC members; $10.00 for nonmembers.

THE IMPORTANCE OF FORMS IN AN AUTOMATED SYSTEM

R. S. Daugherty, Shelby Salesbook Co., Shelby, Ohio.
THE OFFICE, January 1958; pages 125-128.

The accuracy and efficiency with which source documents are handled affects the efficiency of the entire business system. Management is invited to ask advice of members of the Business Forms Institute in setting up a business system. Forms design should be based on the job to be done, and might include any or all of the following ideas: 1. Information found on more than one form should be in identical sequence or location; 2. Form design should make file reference easy and quick; 3. Forms should be designed to eliminate rubber stamping; 4. Weight and grade of paper and direction of grain are determined by handling and filing of documents; 5. Destination of each copy should be printed on the forms; 6. Forms should be designed for window envelopes whenever possible; 7. Use of check boxes saves time; 8. Preprinted information saves fillin time; 9. The spacing of the writing machine should determine forms spacing, and information should be aligned for common tab stops.

AUTOMATION CONFERENCE PROCEEDINGS

Published by OFFICE EXECUTIVE, January 1958.

The Automation Conference sponsored by the National Office Management Association in the Fall, 1957, is reported in the January issue of OFFICE EXECUTIVE. Ten articles embrace the proceedings of the conference. Along with some general articles on the preliminary study of EDP and IDP applications, are two case histories, one of an airline's redesign of procedures as a preliminary to an EDP study; the other of a production and inventory control system using an IBM 650 in the phonograph record business.

The airline found that its new procedure had produced so much efficiency that consideration of an EDP system could be delayed until volume of work increased to justify it.

Hit-record production control

Columbia Records uses its present system, and will use its contemplated expanded system, to produce important current reports on hit records for immediate variations in production planning. Previous day's sales statistics are available to the order service manager by 1:30 each day, enabling him to cancel or schedule production on the second-shift operation which begins at 3:30 p.m. Royalty earnings are also computed and summarized by the system. This can become a very complex operation. For example, there can be "as many as eighteen different artists performing on one record and thirty different copyright owners involved." In addition, tax and personnel records, accounts receivable, sales analysis, dealer accounts, and salesmen's commission reports are processed by the computing system.

"HUMAN APPROACH" TO LIGHTING, COLOR COORDINATION BENEFITS CON EDISON

OFFICE MANAGEMENT, December 1957; pages 37, 38, 70

Consolidated Edison Company of New York spent much time during the design of its EDP facilities to consideration of light and color. The company realized that "a pleasant visual environment reduces eye fatigue and actually perks up the person's mood, automatically leading to... efficiency." Since persons doing extensive reading and paper work expend about one-third of their energies through extensive use of the eyes, lighting fixtures were designed to give good light without glare. These were recessed in the hung ceiling, because suspended fixtures would cause uncomfortable down-drafts from the air conditioning system. An acoustical ceiling with a reflection factor of 90%, and a composition block floor in yellow with a reflection factor of 44% were installed. Walls were painted in colors to provide reflection factors of from 40 to 50 per cent. Colors are salmon-pink, yellow and green.

DO YOU REMEMBER?

NAVY MANAGEMENT REVIEW, January 1958; pages 21-23.

A short review of the problem of information retrieval is given. Various methods of storing information in media with built-in retrieval characteristics are described. These include the Keysort card, the machine sorted punched card, single aspect cards (including the Uniterm system and the "Peek-a-Boo" system), Filmsort, Microcard, and Minicard systems. Since each of these systems has been discussed in papers and published articles, it is interesting to see these brief descriptions side-by-side, to picture more clearly their differences.

FIRST DATAMATIC INSTALLATION

COMPUTING NEWS, February 1, 1958; pages 3-5.

Some facts are given about the physical requirements of Datamatic installation at Michigan Blue Cross-Blue Shield in Detroit. The computer and its peripheral equipment is housed in three rooms. In the first are the central processor, console, magnetic core memory, control unit, buffer units, and read-write unit. Each unit has its own 5-ton air conditioning unit which circulates 54-degree air around the tubes. Eight tons of air conditioning are provided for room comfort. Dust filters in the room work at 85% efficiency.

In the second room 16 tons of air conditioning are required for the eight file units. Humidity is kept at 40 to 60 percent. Input-

output equipment is housed in the third room. This includes a card reader, card punch, printer, and input and output converters. This room requires five tons of air conditioning. Water used for the air conditioning is cooled and reused.

About 25, 000 transactions a day affect the records contained on the Master Billing and Member Status tape files. Output tapes are generated which are run off-line to print bills, checks, decisions on liability, and other forms.

ELECTRONICS IN THE OFFICE

THE ACCOUNTANT, January 18, 1958; page 75.

A page of news in the EDP field is included in this British publication at intervals. In this issue three short items are of interest:

The British Tabulating Machine Company has established a Hollerith Computer Center at 36 Hertford Street, London W1, to provide a forum around a working computer in which problems of management may be discussed in computer terms. Courses and meetings will be held at the center for individuals and organizations concerned with computer problems.

A new group called the British Group for Computation and Automatic Control (known as Group B) is one of three (the others on engineering and sociological aspects of automation) which form the British Conference on Automation and Computation, set up to provide liaison among professional organizations interested in the automation fields. The Secretary is Mr. W. Bamford, care of The Institution of Electrical Engineers, Savoy Place, London WC2.

At the Institute of Actuaries a paper was read that showed how linear programing could be used by an insurance company to reduce the volume of records needed in valuing the liabilities under its assurance policies.

ONE PROBLEM THE COMPUTERS CAN'T SOLVE

FORBES, January 1, 1958; pages 83-86.

Most of the companies manufacturing computers have realized no profits from their computer products. But the companies all believe that they had to get into the computer field "to make sure that they would not be left without salable products as the newer equipment came along and made their standard mechanical and electrical systems obsolete." It is predicted, however, that the computer market will be $1 billion by 1965, four times its 1957 level, and as much as $1.5 billion by 1970.

Applications

AUTOMATIC BOOKKEEPING FOR CHECKING ACCOUNTS

Forde Steele, Central National Bank, Cleveland, Ohio
BANKING, January 1958; page 40, 41, 122.

Banks are warned against jumping into the purchase of check-printing and -sorting devices before they know exactly how they will fit in with their other operations.

Check imprinting methods

On-the-premises check imprinters and encoders may be useful for banks that have "sell the book" plans for special checking accounts, if otherwise lost time may be used in printing the checks, and if the quality of the imprint is good. The location of the number should probably be the upper right hand corner to facilitate manual sorting until the automatic sorters and magnetic ink numbers are used. When this occurs, the number will be placed at the center of the lower edge as standardized by the A. B. A. In the matter of on-the-premises magnetic ink printing, "there is no assurance at the present time that the ink impression placed on the check by the imprinter you choose can be successfully read." For customers who use large quantities of checks, the commercial printing job is still the best. Check-printing by offset duplicators also has its problems, and is not recommended for banks having less than 10,000 to 15,000 checking accounts, a skilled press operator, and adequate equipment for cutting and binding the checkbooks.

Check sorters probably will cost in the neighborhood of $30,000. If this is the case, "it is hard to see how any bank with less than eight or nine bookkeepers can afford an electronic sorter." This would be the equivalent of three persons spending full time on manual sorting. "It seems likely that, for banks with 10,000 or more items per day, the installation of an electronic sorter will be economically feasible. However, future mass production economics may well lower this figure."

EDP AT THE FRANKLIN LIFE INSURANCE CO.

Albert C. Vanselow, Franklin Life Insurance Co., Springfield, Ill.
OFFICE EXECUTIVE, February 1958; pages 21-24.

The policy records in The Franklin Life application are maintained in a master tape file on a monthly cycle, with a separate name and address file. A Univac computer system is used. Premiums due, policy loans, and dividend payments are processed from the same tape run for any one day. Records for each due date are placed on

Single file, monthly cycle

the tape in policy number sequence. The name and address file is in the same sequence. An interesting point is that no verification is made of Unityped policy and premium information on returned premiums, since it was found that typists' errors were less than 0.1 percent. Besides, there is sufficient information on the outstanding premiums tape (accounts receivable) to identify positively each policy and payment. The outstanding file items contain sufficient information for making the accounting entries, distributing premium income for tax purposes, and providing data for calculating credit agency commissions. Past due premiums are reproduced from the file for agency action or the preparation of lapse notices.

Franklin plans eventually to dispense with all but one visual record file. Those dispensed with will be replaced with periodic listings.

PROCEEDINGS OF THE I.A.S.A., 1957

The Insurance Accounting and Statistical Association devoted a portion of its 1957 meeting to electronic data processing applications. These talks were on systems actually in operation or definite planning stages. An interesting and informative talk was by R. E. Anderson of Aetna Insurance Group and the SPAN project. He discussed the organizational structure of SPAN, and the preliminary investigations of the four competing insurance companies which have cooperated in operating a computing center for their mutual benefit.

Single file, daily cycle

Another interesting installation is that of the Northwestern Mutual Life Insurance Company. The original planning for a computer assumed a monthly cycle of operation with a separate name and address file ((see Franklin Life article above)). However, when the electronics committee began to evaluate equipment, they decided to look ahead toward their "short-range ultimate" goal and design the system to meet it. For them "the foreseeable ultimate turned out to be a daily cycle work pattern. This work pattern included [premium billing and accounting, commission accounting, dividend calculation and application, reserve valuation,] premium loan accounting, policy loan billing and accounting, non-forfeiture values, agency statistical work and terminations.... We tried to include in our daily cycle as much of the insurance application as we could."

Here are some of the features of the daily work cycle:
1. Master file is in policy number sequence and includes name and address, dividend accounts, indebtedness accounts and other information necessary for premium billing and policy value determination.
2. The entire master file will be processed daily, with the day's new activities selected, and yesterday's completed activities replaced. 3. Subsequent runs will process the various activities.
4. An audit trail will be maintained by recording in each master file record a Date of Last Transaction which will be printed out in

a daily register.

Cost of the proceedings is $20.00. The volume may be ordered from: Mr. L. J. Hale, Kansas City Life Insurance Company, P.O. Box 139, Kansas City, Missouri.

CLASSIFYING CODED MESSAGES AUTOMATICALLY

C. R. Fisher, Stromberg-Carlson
AUTOMATIC CONTROL, January 1958; pages 17-19.

The Rock Island Railroad, which handles about 10,000 cars daily, wanted to tell consignees the time of arrival of shipments as quickly as possible. Stromberg-Carlson was asked to devise a system for this purpose. The system makes use of information contained in the "wheel report" as it is teletyped to the central office in Chicago. A code letter identifies the beginning and end of the wheel report, causing the sorting circuit to start or stop, depending on the code. Each car is separated according to destination, and all information for a given sales office is accumulated on a single punched tape for transmission to the office at some convenient time.

305 RAMAC IN WAREHOUSING OPERATION

Factory Motor Parts Inc., wholesale distributors of Chrysler automotive products, has installed an IBM 305 RAMAC for control of 23,000 inventory items and for customer billing operations. An order is entered into the RAMAC system upon receipt from (for example) the phone room. The system determines whether the part is in stock, if it has been superseded by an improved model, its location in the warehouse, and other information needed to print out the shipping order and the "picking ticket." In the same operation, the system prices the item and makes all computations necessary for preparation of the invoice, runs a routine credit check on the customer, and updates all pertinent sales and accounts receivable records. The order can be placed on a delivery truck within an hour.

PAPERWORK REVOLUTION ON THE CP

MODERN RAILROADS, February 1958; pages 63-72.

The Canadian Pacific has linked its 1500 freight offices and stations, 66 shops, 78 store houses, 75 yard offices, and numerous non-railroad facilities in a cross-country IDP system, with an IBM 705 computing center in Montreal.

AUTOMATED PURCHASING

AERONAUTICAL PURCHASING, November 1957; pages 20, 21.

Douglas Aircraft Company has instituted a system for reducing the paperwork involved in processing purchase orders of their customers for planes and spare parts. A Parts Data Card File is maintained for all items called for on Douglas drawings, on both Remington Rand and IBM cards. Each purchaser receives Parts Order tab cards for each item selected as a spare part, with all necessary information punched from the Parts Data Cards. The Parts Order Card is returned by the purchaser as a purchase order when spares are needed.

TIMKEN'S INTEGRATED SHIPPING CENTER

PRODUCTION, January 1958; pages 104-106.

Punched location card becomes picking ticket

The Timken Roller Bearing Company has consolidated its shipping facilities in its huge Shipping Center at Bucyrus, Ohio. An IBM 650 in the company's Canton, Ohio, offices "keeps a running account of all inventory, scheduled production and unfinished customer orders for the national network of Timken plants." Orders are sent to the Shipping Center from the Canton office on allocation cards and are filed at the Shipping Center by shipping date. Parts are warehoused in random order, with location recorded on punch cards which are filed in the Shipping Center office. These location cards are used as picking tickets. When an order is picked, another location card bearing the same location number as the part picked for the order is sent to the incoming parts station to notify the keypunch operator that a station is open for storing a new shipment. The operator keypunches the new incoming part information on the location card and attaches it to the shipment, then routes the shipment by means of the control conveyors to its assigned location. The location card is removed from the shipment and returned to the office to await a new order.

Equipment

READER DEVELOPED FOR HANDWRITTEN NUMERALS

AUTOMATIC CONTROL, January 1958; pages 21, 22.

EXPERIMENTAL "BRAIN" READS HANDWRITTEN NUMERALS

ELECTRONIC DESIGN, January 22, 1958; pages 6, 7.

An experimental device the size of a portable typewriter that can read handwritten numerals or identify numerals as they are being written has been invented by Tom L. Dimond of Bell Telephone Laboratories. In order that written numerals may be read with a minimum possibility of error, mild restrictions must be placed on their size and form. Two dots and seven vectors extending from the dots are the references upon and around which the numerals must be written. Numerals are written on a sheet of paper with a conductive pencil. Then the sheet is placed on a specially prepared plate which contains the references as a sensitized pattern. Each numeral is a unique combination of line crossings. The translator distinguishes which pattern is being displayed, then produces a corresponding output which illumines the proper number in a panel, operates a teletypewriter, feeds the information to a computer, or performs other control functions.

THE NATIONAL CASH REGISTER HIGH SPEED MAGNETIC PRINTER

Seehof, et al., The National Cash Register Company, Electronics Division, Hawthorne, Calif. Paper presented at Eastern Joint Computer Conference, 1957.

A magnetic printer which is in the experimental design stage is described in engineering terms. Present printing speed is 2000 characters per second--ultimate goal is 20,000 to 50,000 characters per second. Copy may be printed on paper or on a multilith paper master for printing multiple copies.

THE UNIVAC HIGH SPEED CARD PRINTER

COMPUTING NEWS, February 1, 1958; pages 15, 16.

The Univac High Speed Card Printer receives its input from magnetic tape. Output is a punched card which may be printed on both sides in two print stations following the punch station. Printing speed is 900 lines a minute. Cards out-put at 1500 minute. The printer may be programed to dump the cards into any one of the three output stackers. The printer contains a 5000 word storage drum, and an arithmetic unit which adds and subtracts. The machine is controlled from an internally stored program, which may include logic commands.

MINIRAM

Potter Instrument Company has designed a miniature random access magnetic tape memory. The unit is about 12 inches in height, and accommodates two tape reels, each containing approximately 35 feet of tape, on which may be stored about 150,000 characters. Average access time is less than 1/2 second. Individual MINIRAM transport units may be added to increase the storage capacity. The programing circuitry and tape drive are completely transistorized.

Programing

OFF-LINE TAPE SORTING

COMPUTING NEWS, January 1, 1958; pages 12-14.

The off-line tape sorter ((which we assume to be the Univac File Computer Model 1)) "is a good piece of hardware, but not a cure-all." Some persons in the automotive field have studied a series of possible applications with both positive and negative results. For sorting 60,000 records of parts usage derived from shipping instructions into part number order, some difficulties were encountered in use of off-line sorting:

Some disadvantages

a. The unit operates on blocks of shorter length than the record requires, so leaders and trailers must be inserted to identify each record.

b. The sorter is unable to total identical parts as the sort progresses, so each pass is for all 60,000 records.

c. A computer run is required for totalling.

In addition, the sort would take three times as much time as on the Univac, and the one-day delay in sorting by the off-line method would be critical in this application.

However, in the sorting of 20,000 service parts inventory transactions, warranty claims, stock transfers, and in other areas (but not payroll where cards are already sequenced), off-line sorters "can contribute to an overall reduction in time..., to an increase in available main frame time, and to lower overall cost of operation...." Computer system rental is $24,000, whereas sorter rental is $3,000.

Comment

THE MEANING OF NEW EQUIPMENT ANNOUNCEMENTS

In recent months, a number of new EDP systems and components have been announced, and we have discussed some of them in this Comment section (see DPD November 1957, page 13). Study has shown that these new equipments pose a serious challenge to EDP systems personnel who are in the process of selecting equipment. Now more than ever before, the EDP systems man must make a thorough, objective study before selecting equipment; many hundreds of thousands of dollars are in the balance.

1. New tape processing systems.

Possibly the most significant improvements have been in connection with EDP systems using magnetic tape for file storage--not random access memories, as so many people believe.

More compact storage

One of the most important characteristics of these new systems is a significant reduction in file size--by factors of 5 to 10--while still retaining the same information, in some important types of applications such as inventory control. This means that far less tape is needed for storing the files; more important, the processing machines can handle these "concentrated" files rapidly and efficiently. Of course, information can be packed on tape with older systems, but the programing and processing times usually make such a step quite expensive. The capabilities of the new systems are forcing EDP systems people to stop laying out records as they did for punched card systems.

Also, it is apparent that major cost savings can be made by selecting the best EDP system for a particular application; the difference in cost to the user between apparently competitive systems actually runs into many hundreds of thousands of dollars in typical applications. These cost savings are not coming about so much through reducing the prices of the equipment as through the increase in the ability of the equipment to process data faster at about the same equipment price.

Intuition fails the systems man more now. Instead, he needs to time out and cost out each of the competitive systems on a carefully defined workload.

2. New random access memory systems.

Management's first reaction to RAM systems usually is: "Well, now, this looks like the answer for us. When I want to get

some information, I don't have to wait around for hours, like I would with a tape system. And we have lots of inquiries that have to be answered immediately, every day." But despite all the fanfare and the glamour associated with these RAM systems, it is now apparent that it is very difficult to install such systems economically. Of course, there are certain types of applications, such as airline reservations, that require random access to files. But actually many applications that apparently need RAMs turn out upon study, to be very valid tape applications.

So far, RAM systems are having the usual difficulty of a new product. For one thing, there is the difficulty of making the devices work mechanically, to the high degree of reliability needed, although we think these problems will be solved satisfactorily. Above that, however, is the problem of how to properly use these new systems--and this seems to be more difficult to solve. Not only are RAM memories much more expensive (see DPD, July 1957, page 15), but they have difficult addressing problems and data destruction safeguarding problems that are easily solved in most tape systems.

RAM systems may be booby-traps

Random access memories have many fine features--but they are heavily booby-trapped for the unwary. Again, the only sensible approach for the EDP systems man is to time out and cost out a carefully defined complete process, before deciding to select a RAM machine.

3. Translator units.

The problem of communicating between EDP machines is a greatly ignored area. Social Security and withholding tax reports may now be submitted to the government on IBM 705 tapes. However, there is no provision for accepting tapes from users of other brands of equipment. Perhaps the optimum solution to the problem is to set up industry-wide standards on tape format, coding, recording specifications, and so on. For the moment, though, it is necessary to find a more immediate answer.

Some limitations in using translators

Recently-announced translator units will provide for converting from one EDP machine's tape to another EDP machine's tape. These special purpose units are somewhat limited in what they can perform, in the face of such factors as variable field lengths, variable record lengths, trailers which may or may not exist, and so on. However, in many cases they are a practical solution to the problem of communicating between machines. The EDP systems man is faced with analyzing his application carefully and determining just how much can be accomplished within the technical and economic limitations of these units.

As we said at the outset, these new equipments all pose a serious challenge to the EDP systems man. His "freedom of choice" is greater and the penalties of a poor decision are greater.

References. The following references are digests which have appeared in Data Processing Digest during the past year. They direct the attention of the reader to articles which discuss in detail the equipment mentioned in the foregoing Comment.

IBM 705 III - Vol. 3, No. 11, pages 5 and 14
NCR 304 - Vol. 3, No. 6, page 11 (reference is found in the Proceedings of the Automatic Coding Symposium)
Burroughs 220 - Vol. 3, No. 11, page 13 and Vol. 4, No. 1, page 7
E. E. Co. Translator - Vol. 4, No. 1, page 8
IBM 305 RAMAC - Vol. 3, No. 9, page 11
DataFile - Vol. 3, No. 8, page 11, and No. 9, page 11.

Training

NOMA Pre-Computer Clinics, sponsored by the National Office Management Association
Dates and Places: March 24, 25, Baltimore; April 14, 15, Houston; April 7, 8, Atlanta; April 21, 22, Toronto
Program: The three major stages of computer planning: Origin of idea, survey of present procedures, implementation of the system
Fee: $60 for NOMA members; $75 for nonmembers
Information: National Office Management Association, Willow Grove, Pa.

Operations Research Seminars, sponsored by American Management Association
Date: Continuous through Spring 1958
Place: Various
Information: American Management Association, 1515 Broadway, Times Square, New York 36, New York

Electronic Data Processing for Business and Industry (Course 10), sponsored by Canning, Sisson and Associates
Date: April 14-18, 1958
Place: New York (Hotel Biltmore)
Fee: $250
Program: Emphasis on the applications aspect of electronic data processing, planning for an EDP system
For whom: Management personnel charged with setting up an EDP system
Information: Canning, Sisson and Associates, 1140 South Robertson Blvd., Los Angeles 35, California

Linear Programming--One-week Basic Course, sponsored by Marquette University Management Center and The American Institute of Industrial Engineers

Date: April 28-May 2, 1958
Place: Milwaukee, Wisconsin (Marquette University)
Fee: $125
Information: Management Center, Registration Clerk, Marquette University, Milwaukee 3, Wisconsin

"The Company President Looks at Electronic Data Processing," sponsored by the University of California at Los Angeles

Date: May 1, 2, 1958
Place: Lake Arrowhead, California (UCLA Residential Conference Center)
For whom: Company presidents and vice presidents
Fee: $100 (includes room and board)
Information: Mr. Sam Houston, Room 3116, Engineering Building, University of California, Los Angeles 24, California

Installing an Electronic Data Processing System (Course 20), sponsored by Canning, Sisson and Associates

Date: May 12-16, 1958
Place: New York (Hotel Roosevelt)
Program: Organization, Personnel, Physical Installation, Conversion, Operation of the EDP system are subjects covered. It is desirable, but not required, that attendees have taken Course 10 or its equivalent
Information: Canning, Sisson and Associates, 1140 South Robertson Blvd., Los Angeles 35, California

Operations Research in Production and Inventory Control, sponsored by Case Institute of Technology

Date: June 2-13, 1958
Place: Case Institute, Cleveland, Ohio
Information: R. L. Bell, Engineering Administration Department, Case Institute of Technology, 10900 Euclid Avenue, Cleveland, Ohio

Summer Engineering Seminars, sponsored by The Pennsylvania State University

Introduction to Computer Programming, June 16 to 21
Automatic Data Processing in Business and Industry, June 23 to 28
Scientific and Engineering Computation, July 13 to 25
Mathematical Methods for Management, August 3 to 8
For information, write: Extension Conference Center, The Pennsylvania State University, University Park, Pennsylvania

Electronic Data Processing for Business and Industry (Course 10), sponsored by Canning, Sisson and Associates

Date: July 28 through August 1, 1958
Place: New York (Hotel Biltmore)
Fee, Content, Information: See same course listed above

Failures in Business Data Processing...and How to Avoid Them, sponsored by Management Science Training Institute

Course is presented each week in a different city, and lasts for one week.

Fee: $400
Program: Planning for automatic data processing
Information: Management Science Training Institute, 40 Wall Street, New York 5, New York

COLLEGE COURSE

Canisius College, Buffalo, New York

Spring semester, 1958: Commercial Applications of Computers
For information, write to Director of Admissions, Canisius College, Buffalo 8, New York

Meetings

IRE National Convention

Date: March 24-27, 1958
Place: New York City (Waldorf Astoria Hotel and New York Coliseum)

Western Joint Computer Conference

Date: May 6-9, 1958
Place: Los Angeles, California (Ambassador Hotel)
Theme: Contrasts in Computers. The last day will be devoted to Reports from the Manufacturers on small automatic computers and input/output equipment.
Information: Dr. Willis H. Ware, General Chairman, care of Rand Corp. 1700 Main Street, Santa Monica, California

Operations Research Society of America (Annual Meeting)

Date: May 15, 16, 1958
Place: Boston, Massachusetts (Sheraton-Plaza Hotel)

NOMA Office Show and Conference

Date: May 25-28, 1958
Place: Chicago (Conrad Hilton Hotel)
Information: The National Office Management Association, Willow Grove, Pennsylvania

Canadian Computer Conference

Date: June 9, 10, 1958
Place: University of Toronto, Toronto, Canada
Information: H. J. Stowe, Manufacturers Life Insurance, 200 Bloor Street, East, Toronto 5, Ontario, Canada

International Automation Exposition and Congress

Date: June 9-13, 1958
Place: New York (Coliseum)
Information: Richard Rimbach Associates, Show Management, 845 Ridge Avenue, Pittsburgh 12, Pennsylvania

Association for Computing Machinery Annual Meeting

Date: June 11-13, 1958
Place: Urbana, Illinois (University of Illinois)

"Industrial Engineering--Gateway to Productivity," 9th Annual Conference of the American Institute of Industrial Engineers

Date: June 12-14, 1958
Place: Los Angeles (Hotel Statler)
Program: Fifty sessions on industrial engineering subjects will be held. In addition, during the conference, management game will be played as a demonstration of simulation technique in management-decision-making. An IBM 650 will be used for computing the results during the playing.
Information: Stanley Wolfberg, 1409 Thayer Avenue, Los Angeles 24, California

Instrument Society of America Automation Conference

Date: September 15-19, 1958
Place: Philadelphia, Pennsylvania (Convention Hall)

SHARED PROGRAMING GROUP

USE-- Next Meeting: March 26-28, 1958; Washington, D. C.

References

The addresses of publishers and periodicals mentioned in this issue of DATA PROCESSING DIGEST are listed below for your convenience in obtaining further information about the articles or books listed.

The Accountant
4 Drapers' Gardens
Throgmorton Avenue
London EC2, England

Advanced Management
74 Fifth Avenue
New York 11, New York

Aeronautical Purchasing
812 Huron Road
Cleveland 15, Ohio

American Management Association
1515 Broadway, Times Square
New York 36, New York

Automatic Control
430 Park Avenue
New York 22, New York

Banking
12 East 36th Street
New York 16, New York

Computing News
12805 – 64th Avenue South
Seattle 88, Washington

Electronic Design
830 Third Avenue
New York 22, New York

Electronic Week
830 Third Avenue
New York 22, New York

Forbes
80 Fifth Avenue
New York 11, New York

Modern Railroads
201 North Wells Street
Chicago 6, Illinois

National Association of Bank
Auditors and Comptrollers
38 South Dearborn Street
Chicago 3, Illinois

National Office Management Assoc.
Willow Grove, Pennsylvania

Navy Management Review
Department of the Navy
Navy Management Office
Washington 25, D. C.
(For subscription order:
Supt. of Documents
U. S. Government Printing Office
Washington 25, D. C.)

The Office
232 Madison Avenue
New York 16, New York

Office Executive
Willow Grove, Pennsylvania

Office Management
212 Fifth Avenue
New York 10, New York

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Box 1
Birmingham, Michigan

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